D H E C
PROMOTE PROTECT PROSPER
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To: G. Kendall Taylor, P.G., Director
Division of Hydrogeology
Bureau of Land and Waste Management

Thru: Joe Bowers, P.G., Manager
RCRA Hazardous Waste Section
Division of Hydrogeology
Bureau of Land and Waste Management

From: Cynde Devlin, Hydrogeologist
RCRA Hazardous Waste Section
Division of Hydrogeology
Bureau of Land and Waste Management

Date: September 5, 2002

Re: Former Eliskim Site
SCD 003 342 938
Anderson County

Evaluation of the Former Eliskim Site status under the RCRIS Corrective Action Environmental Indicator Event Code CA750 (Migration of Contaminated Groundwater Under Control)

Please find attached an evaluation of the Environmental Indicator (EI) Event Code CA 750 (Migration of Contaminated Groundwater) for the Former Eliskim Facility. An evaluation of the migration of contaminated groundwater was completed for Eliskim in August 1998. The August 1998 evaluation resulted in a "NO" for migration of contaminated groundwater. Although a groundwater remedial system had been installed in late 1997, the effects of the system could not be determined at the time of the EI evaluation, therefore, an Event Code of "NO" was entered into RCRIS. The effectiveness of the groundwater remedial system has been evaluated in this memorandum. This memo does not include an evaluation of the EI Event Code 725 (Human Exposures). The CA 725 evaluation is scheduled to be completed in 2005.

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DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: Eliskim
Facility Address: 221 True Temper Road, Anderson, SC Anderson County
Facility EPA ID #: SCD 003 342 938

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   __X__ If yes - check here and continue with #2 below.

   _____ If no - re-evaluate existing data, or

   _____ if data are not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

__X__ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

_____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): Releases from the former surface impoundments and Roto Pond have contaminated groundwater at concentrations above relevant action levels. Groundwater contamination is laterally extensive across the site. The highest concentrations of groundwater contamination detected during 2001 were found near the treatment system in the area of well OS-8 (3000 ug/l Tricholorethene) and the capped area near monitoring well W-1 (2400 ug/l TCE). The contaminant plume extends vertically into the top of fractured bedrock and horizontally toward Beaver Creek. Eliskim purchased/leased additional property prior to installing the final remedial system in 1997 extending the property boundary to include the entire contaminant plume. The main constituents of concern include trichloroethene (TCE) and nickel. Various other volatile organic constituents and metals have been detected. Contaminated groundwater is discharging to the unnamed tributary on site which leads to Beaver Creek.

Footnotes:

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination)?

__X__ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): Eliskim installed the final groundwater remedial system in 1997 which has stabilized both the groundwater and surface water contaminant plumes. The system includes a recovery trench at the downgradient end of the groundwater and surface water contaminant plume and a recovery well near the former Roto Pond and surface impoundments. The pump and treat system has been successful at preventing the plume from spreading and preventing surface water contamination from reaching Beaver Creek. Groundwater contaminant concentrations have decreased in some areas of the plume and remained stable within the remainder of the plume. Eliskim also purchased adjoining property to install the remedial system and ensure access for long term groundwater and surface water monitoring.

[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

__X__ If yes - continue after identifying potentially affected surface water bodies.

_____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): Contaminated groundwater from the former surface impoundments and Roto Pond is discharging to the on-site unnamed tributary which leads to Beaver Creek. Trichloroethene was detected in surface water at sampling station SW-A at a concentration of 17 ug/l in September 2001. TCE concentrations ranged from 28 ug/l to 100 ug/l in 2000 and 47 ug/l to 230 ug/l in 1999 at the up stream sampling locations. Other contaminants detected in surface water include methylene chloride, vinyl chloride, 1,1-dichloroethylene, 1,2-cis dichloroethene and metals such as nickel and zinc. Sampling station SW-A is located upstream of the treatment system. Contamination was not detected at sampling stations located downgradient of the treatment system in 1999, 2000 or 2001.

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

__X___ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s): Surface water contaminant concentrations upstream of the treatment system did exceed the National Primary Drinking Water Standard Maximum Concentration Limit (MCL) of 5 ug/l for Trichloroethene in 2001. However, the concentration detected at sampling location SW-A (17 ug/l) in 2001 is less than 10 times the MCL. Additionally, the final corrective action system which consists of a recovery trench at the downgradient edge of the surface water and groundwater contaminant plume became operational in October 1997. The remedial system also consists of a pumping well immediately downgradient of the former surface impoundments and Roto Pond. Remedial activities were completed in 1998 with additional capping of the former Roto Pond.

[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR
2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):

[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

__X__ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

_____ If no - enter "NO" status code in #8.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s): Currently the site is in post closure care and has a Hazardous Waste Post Closure Care Permit SCD 003 342 938 which requires routine monitoring of the groundwater contaminant plume, surface water, and discharge from the treatment system. Although the site has exceeded the compliance period of 11 years which ended in 2000, the facility is still required by the Permit to monitoring both groundwater and surface water while remediation is on going.

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)

Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

__X__ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Eliskim facility , EPA ID # SCD 003 342 938, located at 221 True Temper Rd, Anderson, South Carolina. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

_____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

_____ IN - More information is needed to make a determination.

Completed by (signature) Cynde Devlin Date 9-6-02
(print) Cynde Devlin
(title) Hydrogeologist, SCDHEC

Supervisor (signature) G. Kendall Taylor Date 9/6/02
(print) G. Kendall Taylor, P.G.
(title) Director of Hydrogeology
(EPA Region or State) South Carolina

Locations where References may be found:
1) Eliskim Post-Closure Hazardous Waste Permit Renewal Application (rev 9-97)
2) Annual Monitoring Report 1999
3) Annual Monitoring Report 2000
4) September 2001 Monitoring Data

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